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GENERAL STUDIES (TEST CODE : 1840)

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Medium Eng./Hindi	ENGLISH	Registration Number	731806
Center	ONLINE	Date	6/9/2022

INDEX TABLE

Q. No.	Maximum Marks	Marks Obtained
1	10	
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15	15	
16	15	
17	15	
18	15	
19	15	
20	15	

Total Marks Obtained:

Remarks:

INSTRUCTIONS

1. Do furnish the appropriate details in the answer sheet (viz. Name, Registration Number and Test Code).
उत्तर पुस्तिका में सूचनाएं करना आवश्यक है (नाम, प्रश्न-पत्र कोड, विद्यार्थी क्रमांक आदि)।
2. There are **TWENTY** questions printed in **ENGLISH & HINDI** इतने बीस प्रश्न हैं अंग्रेजी और हिन्दी में छपे हैं।
3. **All questions are compulsory.** सभी प्रश्न अनिवार्य हैं।
4. The number of marks carried by a question/part is indicated against it.
प्रत्येक प्रश्न/भाग के अंक उसके सामने दिए गए हैं।
5. Answers must be written in the medium authorized in the Admission Certificate, which must be stated clearly on the cover of this Question-Cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other than the authorized one.
प्रश्नों के उत्तर उसी माध्यम में लिखे जाने चाहिए जिसका उल्लेख आपके प्रवेश पत्र में किया गया है और उक्त माध्यम का स्पष्ट उल्लेख प्रश्न-सह-उत्तर (क्यूआए) पुस्तिका के मुख्य पृष्ठ पर अंकित निर्दिष्ट स्थान पर किया जाना चाहिए। उल्लिखित माध्यम के अतिरिक्त अन्य किसी माध्यम में लिए गए उत्तर पर कोई अंक नहीं मिलेंगे।
6. Word limit in questions, if specified, should be adhered to.
प्रश्नों में शब्द सीमा, जहाँ विनिर्दिष्ट है, का अनुसरण किया जाना चाहिए।
7. Any page or portion of the page left blank in the Question-Cum-Answer Booklet must be clearly struck off.
उत्तर पुस्तिका में खाली छोड़ा हुआ पृष्ठ या उसके अंश को स्पष्ट रूप से काटा जाना चाहिए।

16-B, 2nd Floor, Above National Trust Building, Bada Bazar Marg, Old Rajinder Nagar, Delhi-110060

Plot No. 857, 1st Floor, Banda Bahadur Marg (Opp Punjab & Sindh Bank), Dr. Mukherjee Nagar
Delhi- 110009

EVALUATION INDICATORS NIASTM

1. Contextual Competence
2. Content Competence
3. Language Competence
4. Introduction Competence
5. Structure - Presentation Competence
6. Conclusion Competence

Overall Macro Comments / feedback / suggestions on Answer Booklet:

1.

2.

3.

4.

5.

6.

All the Best

1. While fixed-term employment offers an ingenious way to address specific issues faced by both employers and employees, there are also some concerns associated with it. Discuss in the context of India.

(150 words) 10

हालांकि, नियत अवधि का रोजगार (फिक्सड टर्म एम्प्लॉयमेंट) नियोजकों और कर्मचारियों दोनों के द्वारा मायना किए जाने वाले विशिष्ट मुद्दों को हल करने का एक सरल तरीका प्रदान करता है, लेकिन इसके साथ कुछ चिंताएं भी जुड़ी हुई हैं। भारत के संदर्भ में चर्चा कीजिए।

Fixed Term Employment (FTE) was introduced in 2018, and makes it easier to hire workers for a pre-decided term.

Addressing Issues

For employers — Easy to fire workers

Ease of doing business

Availability of workers without going through contractors

For employees — Get benefits at par with regular employees

Don't write anything in margin caps are at eye level

- social security
- Formal sector
- employment
- Employer can't
- tweak contract in
- between

Concerns

- 1) Unions fear that eventually all jobs will come under FTE
- 2) No retrenchment benefits
- 3) No provisions to recognise skills gained during short term employment
- 4) Lack of 'gender outlook' in FTE policy
- 5) short term employment can cause lack of motivation'

Policies like FTE can help in reducing unemployment (6.5% as per CMIE in January 2022)

2. An efficient logistics sector with a focus on warehousing is pivotal to the success of the Bharatmala Pariyojana. Discuss. (150 words) 10

वेयरहाउसिंग पर केंद्रित एक कुशल लॉजिस्टिक्स सेक्टर भारतमाला परियोजना की सफलता के लिए महत्वपूर्ण है। विवेचना कीजिए।

Logistics sector contributes
to 14% of Indian GDP,
and is the prime driver
of India's development. Bharatmala
Pariyojana is a step to revolutionise
India's logistics sector.

Factors pivotal to success of
Bharatmala

Efficient logistics

- 1) Reduction of logistics cost
(currently 14% of GDP compared
to 10% in US and China)
- 2) Effective usage of modes of
transport based on costs

and benefits

↳ currently skewed as >60% via Roads even when costs are highest (104 times of Rail)

- 3) Multi-modal parks
- 4) Dedicated industrial and freight corridors

Focus on warehousing

- 1) To reduce wastage of products
- 2) Better inventory management
- 3) Backward and forward linkages
- 4) Automations to reduce logistical hassles
- 5) Interventions like Negotiable Warehouse Receipts to reduce difficulties

PM-Gati Shakti can also augment Bharatnala Pariyojana for better policy transmission.

3. What do you understand by the term 'irrigation scheduling'? Bringing out the advantages provided by it, discuss the difficulties faced in applying it on a farm level. (150 words) 10

'सिंचाई निर्धारण (इरिगेशन शेड्यूलिंग)' पद से आप क्या समझते हैं? इसके द्वारा उपलब्ध कराये गए लाभों का वर्णन करते हुए, इसे खेत स्तर पर लागू करने के समझ आने वाली कठिनाइयों की विवेचना कीजिए।

'Irrigation scheduling'
refers to the timing of
irrigation practices as per
a timetable, to maximise
efficiency and effectiveness

Advantages

Scientific usage
of water and
preventing excess
use

can even automate
the system to reduce
manpower

farmers can focus on
other farm activities

can reduce usage of
fertilisers if they're linked
with irrigation (e.g. fertigation)

Same water
sources
can
be used
by
multiple
farmers
at different
times

Difficulties in applying at farm level

- 1) Farmers still prefer using old methods (eg. Flood irrigation) due to subsidies
- 2) Lack of prudence
- 3) Less awareness and literacy to understand benefits of irrigation scheduling
- 4) Still need manpower to keep a check on stray animals trampling on irrigation systems

Such innovations can help reduce the water stress in India and improve metric under NITI Aayog's Composite Water Management Indices.

4. While the Pradhan Mantri Fasal Bima Yojana was touted as the largest crop insurance scheme globally in terms of farmer participation, various concerns have arisen since its implementation. Discuss. (150 words) 10

यद्यपि, प्रधान मंत्री फसल बीमा योजना को किसानों की भागीदारी के संदर्भ में वैश्विक स्तर पर सबसे बड़ी फसल बीमा योजना बताया गया था, तथापि उसके कार्यान्वयन के बाद कई चिंताएं उत्पन्न हुई हैं। चर्चा कीजिए।

PM Fasal Bima Yojana

was launched to provide crop insurance to crores of farmers in India.

Features of PM FBY

- Large number of beneficiaries
(> 40% of population)
- Coverage of multiple hazards
like extreme weather events
- Large part of premium to be paid by central and state governments

Concerns

- 1) Lack of Centre-State cooperation
as several states were

- not contributing their share
- 2) Apathy on behalf of insurance companies due to less profitability
 - 3) Lack of insurance intermediaries and awareness among farmers
(86% small and marginal farmers who are less literate)
 - 4) Overlapping schemes of different states
 - 5) Lack of records
 - 6) Difficulties for companies in checking suitability of claims

As per IPCC 6th Assessment Report, extreme weather events are to increase, and given India's vulnerabilities, it is imperative to have robust insurance system.

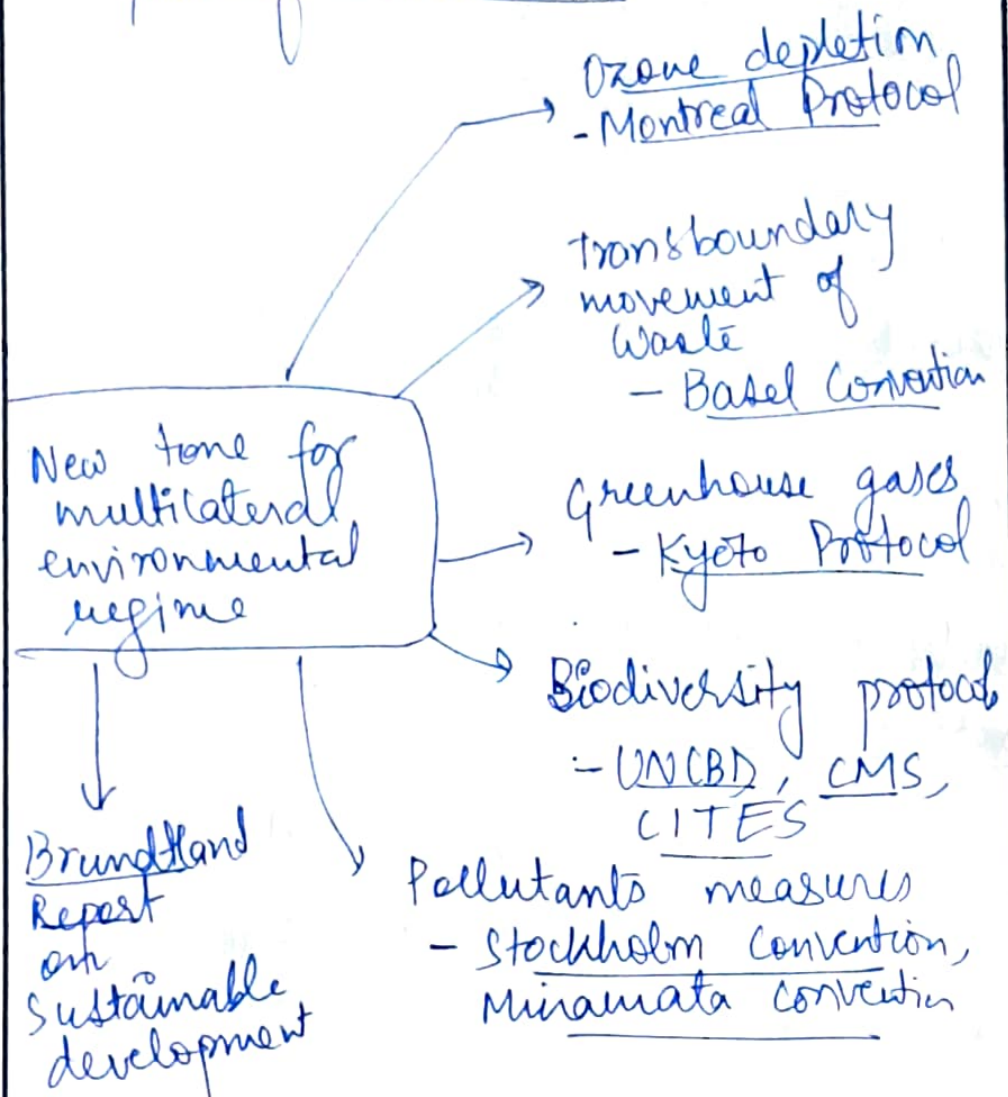
5. The Stockholm Conference commenced the contemporary "environmental era" which brought a paradigm shift in the environmental governance and set a tone for multi-lateral environmental regime. Discuss. (150 words) 10
- स्टॉकहोम कॉन्फ्रेंस ने समकालीन "पर्यावरण युग" की शुरुआत की, जो पर्यावरणीय गवर्नेंस में एक आदर्श बदलाव लाया और उसने बहु-आयामी पर्यावरणीय व्यवस्था के लिए एक दिशा प्रदान की। विवेचना कीजिए।

Stockholm Conference
of 1972 is the watershed
moment of environmentalism
and its interface with governance
across nations.

Paradigm shift in environmental governance

- 1) Post 1972 conference, national laws concerning biodiversity came into play
↳ eg. Wildlife Protection Act of India
- 2) Anti-pollution measures and waste management rules
- 3) Concept of sustainable governance and sustainable development

4) Environment became a central part of discussion



Even today we see the countries doing their best to commit to environment, as seen in India's participation to COP26.

6. The world has witnessed a huge surge in climate induced disasters, which are largely driven by anthropogenic factors. In this context, analyse the role of early warning systems in mitigating the impact of the disasters.

(150 words) 10

विश्व में जलवायु-प्रेरित आपदाओं में प्रत्यक्ष वृद्धि हुई है, जो बड़े पैमाने पर मानवजनित कारकों से प्रेरित हैं। इस संदर्भ में, आपदाओं के प्रभाव को कम करने में पूर्व चेतावनी प्रणालियों की भूमिका का विश्लेषण कीजिए।

India is among top 10
countries when it comes to
climate induced disaster risks,
as per UNEP.

Huge surge in climate induced
disasters due to anthropogenic
factors

- 1) uncontrolled urbanisation
- 2) clogged drains → urban floods
- 3) Excessive use of ACs etc.
↳ Urban heat Island
- 4) Exploitative agriculture and
rising greenhouse gases
- 5) Deforestation causing landslides

- 6) Pollutants killing corals etc.
that act as defence

Role of Early Warning Systems
in mitigating impact of
disasters

- 1) People can be transported to
safe locations to minimise
human loss
- 2) Infrastructural damage can
be prevented via ~~rescue~~
zoning
and mapping
- 3) Disaster resilience via appropriate
fighting mechanism
Leg. Fire extinguishers for
urban fire zones
- 4) Some disasters like floods can
be completely tackled due to
well established patterns

Disaster Management Plan via
Panchayat Raj Ministry recently can
improve efforts via community participation.

7. Critically examine the implications of leveraging technology in policing. (150 words) 10
- पुलिस व्यवस्था (पुलिसिंग) में प्रौद्योगिकी का लाभ उठाने के निहितार्थों का समानोचनात्मक परीक्षण कीजिए।

Policing in India is marred with issues like less manpower (155 policemen per 1 lakh population), custodial tortures etc. Technology can help.

Leveraging technology in policing

Benefits

- 1) Enhanced investigation techniques
↳ eg. DNA fingerprinting
- 2) Monitoring of physical and cyberspace efficiently
↳ eg. CCTVs, CERT-IN.
- 3) Online FIR generation
- 4) Interlinking with e-Prisons database for better hassle free process

- 5) Better inter-agency coordination
- 6) Drones for water gunning
- 7) New age technology like nanobots -
- 8) Enhanced and stealth weaponry

Concerns

- 1) Techniques like DNA collection violate right to privacy under Article 21
 - 2) Technology getting in hands of rogue actors
 - 3) Evil use eg. racial/communal profiling
 - 4) less technological adoption among archaic police force
- Prakash Singh Judgement provides a way for holistic police reforms.

8. How far do you agree with the view that climate change poses a threat to international peace and security? (150 words) 10

आप इस विचार से कहीं तक सहमत हैं कि जलवायु परिवर्तन अंतर्राष्ट्रीय शांति और सुरक्षा के लिए खतरा है?

UNSC tried to pass resolutions regarding climate change, arguing about threats to international peace and security.

Climate change posing a threat

- 1) Small Island States are more vulnerable due to low land level.
It can cause political turmoil
- 2) Countries with better mitigation capabilities can weaprise climate protection avenues
- 3) loss of ecosystem push people towards immoral activities
eg. Boko Haram benefitting

- from depletion of Lake Chad
- 4) Dire situations for biodiversity
 due to glacier melting and
habitat fragmentation
 ↳ can increase insecurity
 due to near animal conflicts
- 5) Weaponisation of arctic region

Counter points

- Climate Change securitisation can reduce say of developing nations as they're not part of UNSC
- Developmental and multi-lateral cooperation via carbon trading, technology cooperation etc. should be prioritised

Overall, climate change affects peace and security, but efforts to alleviate it needs a multi-vector strategy.

9. What do you understand by a virtual private network (VPN)? Highlight its advantages and discuss the concerns posed by it. (150 words) 10

वर्चुअल प्राइवेट नेटवर्क (VPN) ने आप क्या समझते हैं? इसके लाभों पर प्रकाश डालिए और इससे उत्पन्न चिंताओं पर चर्चा कीजिए।

Virtual Private Network

refers to a network helping in bridging the tracking infrastructure by connecting with servers of other geographies.

Ex. IP of USA to open sites banned in India

Advantages

- 1) Can help reaching out to platforms banned in countries

Ex. china bans social media sites

- 2) Increased customer choices

Ex. Person in India can access Netflix library of USA

- 3) Help people fighting the
troublesome Orwellian state
- 4) Protects privacy

Concerns

- 1) Dilutes sovereignty
- 2) Hub of criminal activities
e.g. drug trafficking,
child pornography
- 3) Lack of tracking mechanism
- 4) Goes against national interests
if foreign elements use
VPN to target a country's
valuable assets

VPN is a key
part of cyber security debate.

10. The discovery of the Higgs Boson at the Large Hadron Collider in CERN completed 10 years recently. In this context, discuss the role played by CERN in overall scientific development. (150 words) 10

गर्न (CERN) मियत सार्ज हैड्रॉन कोलाइडर में हिग्ग्स बोसोन की खोज को हाल ही में 10 वर्ष पूरे हो गए हैं। इस संदर्भ में, समग्र वैज्ञानिक विकास में गर्न द्वारा निभाई गई भूमिका पर चर्चा कीजिए।

CERN is located in Switzerland and plays an important role in overall scientific development.

Role played by CERN

- 1) Development of advanced technologies
- 2) Particle physics research
- 3) Augmenting quality space exploration
- 4) Testing theories like Einstein's theory of relativity

s) Enabling technology
transfer to other nations

India should also
invest in a facility like
CERN by cooperating with
countries of the West.

11. Highlighting the factors that affect the cropping pattern in India, discuss the need for modifying it in the context of the emerging agro-ecological concerns. (250 words) 15

भारत में फसल पद्धति को प्रभावित करने वाले कारकों पर प्रकाश डालते हुए, उभरती कृषि-पारिस्थितिकी चिंताओं के संदर्भ में इसे संशोधित करने की आवश्यकता पर चर्चा कीजिए।

Cropping pattern refers to the distribution in time and space of crops, along with techniques of growing.
eg. Rabi/Kharif, Mono/Intercrop

Factors affecting cropping pattern in India

Climatic — Most of the crops in India are rained (>50%).
Unique events like winter cyclonic disturbances essential for Rabi crops.

Temperature variation

Topography
and
soil

Crops like tea
prefer slanting
surfaces to avoid
water stagnation

Different crops
suitable to alluvial,
red soil etc.

Market

Credit
availability

Vicinity of consumers

Location of processing
industries

Government
policies

MSP

Green revolution
caused wheat-rice
system in North
India

Fisheries due to Blue
economy avenues in
coastal areas

Emerging ^{agro} ecological concerns

- Water guzzling crops of Sugarcane

- Overuse of fertilizers causing leaching of nutrients
- Skewed cropping pattern
↳ more focus on rice-wheat instead of millets

Need for modifying pattern

- 1) Rising cases of droughts
- 2) Food security requires hardy crops like millets etc.
- 3) Fulfilling India's SDG goals and Parichay
↳ eg. Paddy fields emit 14% greenhouse gases in India
- 4) Inclusive growth and doubling farmers' real income by incorporating new-age practices eg. mixed farming, organic farming

As 43% of Indian workforce is in Agriculture, there can be wide ranging benefits of change in crop patterns.

12. While the budgetary reforms undertaken by the Central government in recent years have led to better management of government expenditure, here are some issues that still need redressal. Discuss. (250 words) 15

जहाँ हाल के वर्षों में, केंद्र सरकार द्वारा किए गए बजटीय सुधारों के कारण सरकारी व्यय का बेहतर प्रबंधन संभव हुआ है, वहीं कुछ ऐसे भी मुद्दे विद्यमान हैं जिनका समाधान किया जाना अभी बाकी है। विवेचना कीजिए।

Central government has undertaken several budgetary reforms while presenting its annual financial statement under Article 112.

Better management of government expenditure

- 1) Emphasis on capital expenditure over revenue expenses like subsidies has ensured return on expenditure

↳ 75% rise in CAPEX since 2020

- 2) change in mechanisms of disbursements (eg. Direct Benefit

Transfer prevents leakages)

- 3) Gender Budgeting results in effective translation of social policies

↳ eg. earmarking funds for Beti Bachao Beti Padhao

- 4) Outcome budgeting brings accountability and prudence in goal oriented appropriation from exchequer

- 5) Rationalisation of government schemes

- 6) Removal of archaic policies like mail budget, causing streamlined expenditure allotment now

Issues that still need redressal

- 1) Revenue expenditure still forms major chunk (30 lakh

Crave out of 40 lakh crore in 2022 Budget)

2) Less than 6% Gender Budget allocation

3) Outcome budgeting not being followed in letter and spirit

4) Expenditure in overlapping areas

↳ eg. Multiple intelligence bodies under government

5) Lack of fiscal prudence due to populism and freebies

6) Less accountability due to weak institution of CAG

Strengthen accountability

Way Ahead

Increase capital expenditure

More private sector incentives

Focus revenue expenditure in social sectors

Rightful budgeting is the key to a New India with \$5 Trillion economy.

13. For India to create a 'future ready' railway system it must harness innovation and resource efficiency. Discuss the statement in the context of the measures enlisted in the National Rail Plan 2030. (250 words) 15

भारत को 'फ्यूचर रेडी' रेलवे प्रणाली के गठन हेतु, नवाचार और संसाधन दक्षता का उपयोग करना चाहिए। राष्ट्रीय रेल योजना 2030 में सूचीबद्ध उपायों के संदर्भ में इस कथन की विवेचना कीजिए।

Indian Railways is the third largest railways in the world, under a single management. It requires a future ready orientation with changing times.

Future ready railways

Innovation

- New technologies like 'maglev' for bullet trains
- Improved infrastructure for passenger convenience and freight expansion

→ Reducing costs and
increasing speeds

Resource efficiency

- Reduce operating ratio
- Achieving 100% electrification
- Efficient human resources
via skill development

National Rail Plan 2030

- 1) Complete electrification by
2023
- 2) Increase private sector participation
by giving incentives
- 3) Enhance freight transport
infrastructure to increase
speeds to 90 kmph from
present 25 kmph

- 4) Organisational reforms to bring efficiency
↳ eg. IRMS
- 5) Improve the operating ratio situation
- 6) Value added services in trains to provide holistic experience
- 7) Rail security systems
↳ eg. KAVACH

The new outlook of New Delhi Railway Station shared by the minister ~~last~~ recently shows the future of Indian Railways, that is forerunner of Saamanna Bharat (Prosperous India).

14. Discuss the significance of technology in the Indian agricultural sector. Also, state the challenges in realising its potential to improve agricultural efficiency and increase the income of the farmers. (250 words) 15

भारतीय कृषि क्षेत्र में प्रौद्योगिकी के महत्व पर चर्चा कीजिए। साथ ही, कृषि दक्षता में सुधार और किसानों की आय बढ़ाने की दृष्टि क्षमता का उपयोग करने में आने वाली चुनौतियों का भी उल्लेख कीजिए।

As per Dr. Manmohan Singh, Indian agriculture's fatigue can be alleviated with apt technological interventions.

Significance of technology in Indian agriculture

Information technology

- Weather forecasts and data
- Government policy dissemination

Biotechnology

- Modified crops to reduce abiotic stresses ep. Bt-cotton
- Disease resistant crops

Nanotechnology

- Improved fertilisers ep. NanoUrea

has 80% bio-availability

→ Nano-biosensors and Nano-bioremediation for agro-ecology

Other avenues

→ Micro irrigation

→ Precision farming

→ Monochromal plants

Challenges in realising potential

↳ In Improving agricultural efficiency

↳ and increasing income of farmers

- 1) low levels of literacy leading to poor technology adoption
- 2) lack of scale due to prevalence of subsistence farming and land fragmentation

- 3) Less utilisation of mechanisation and extension services which can act as multipliers otherwise
- 4) Lack of awareness
- 5) Stigmatised technology due to perceived ill effects
eg. GM Mustard protests
- 6) In order to increase income, farmers first need money to invest
↳ not possible due to credit crunch

Technological interventions are necessary to achieve the spirit of what PM Modi calls "Jai Jawaan, Jai Kisaan, Jai Vigyaan, Jai Anusandhaan".

15. Despite the digital transformation in the Public Distribution System (PDS) in India, several challenges still remain. Elaborate. Also suggest measures to address them. (250 words) 15

भारत में सार्वजनिक वितरण प्रणाली (PDS) में डिजिटल रूपांतरण के बावजूद, अभी भी अनेक चुनौतियां विद्यमान हैं। सविस्तार वर्णन कीजिए। साथ ही, इनके समाधान हेतु उपायों का सुझाव दीजिए।

Government achieved
the feat of computerising
23.5 crore ration cards, which
shows great digital transformation
in PDS system.

Digital transformation in PDS

- 1) Computerisation of records
and ration cards
- 2) Linkages with Aadhar card
- 3) Data dissemination regarding
PDS supply chain like
fair price shops etc.

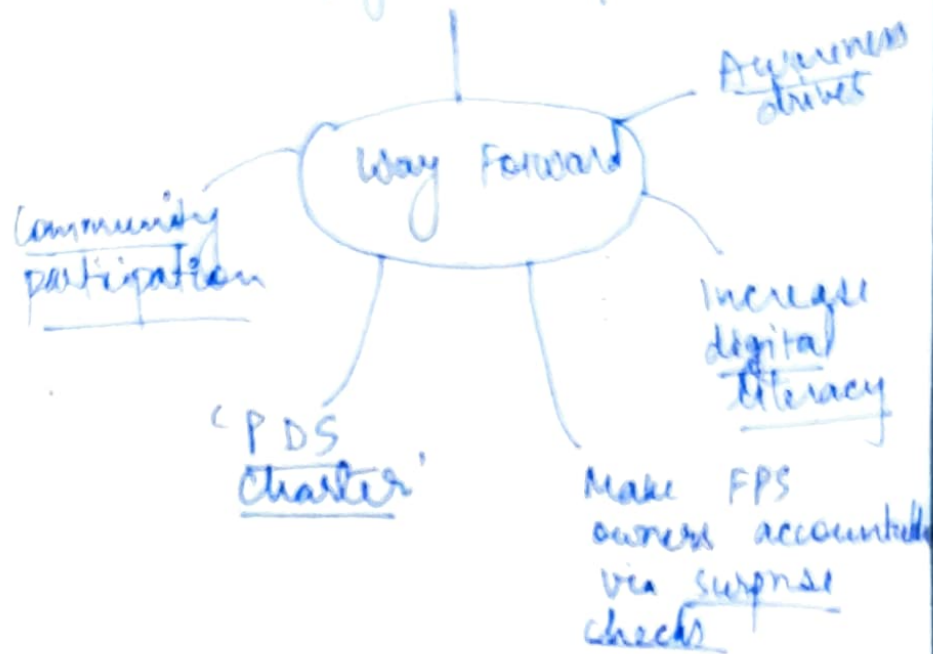
- 4) Portability initiatives to enable One Nation One Ration under IMPDS scheme
- 5) Online disbursement of funds
- 6) Tracking mechanisms to prevent hoarding and black marketing

Challenges remaining

- 1) Less customer adoption due to digital divide amongst PDS beneficiaries
- 2) Leakages and hoarding as FPS owners finding new ways to avoid technology
- 3) No way to guarantee that equitable use is happening within a family (gender orientation)

- required)
- 4) vexus between administration and FPS owners (corruption)
 - 5) Federal tussles and overlapping state government initiatives

More targeted payments of eRUPI



Effective PDS can help India remove hunger (SDG # 2) and reduce inequalities (SDG # 10).

16. Discuss the various concerns that exist with regard to fuel efficiency regulations for vehicles in India. Also, suggest the measures that can be taken in this regard. (250 words) 15

भारत में वाहनों के लिए ईंधन दक्षता विनियमों के संबंध में विद्यमान विभिन्न चिंताओं पर चर्चा कीजिए। साथ ही, इस संदर्भ में किए जा सकने वाले उपायों का भी मुद्दाव दीजिए।

NITI Aayog recently argued that stringent environmental rules cause loss of crores every year to Indian businesses and government. eg. Fuel Efficiency norms

Concerns regarding fuel efficiency regulations for vehicles

- 1) Bharat Stage Norms (BS-VI) have caused vehicle manufacturers to completely overhaul designs, demanding investment
- 2) CAFE regulations for carbon dioxide are hard to adhere to, as most of the

- fuel used is carbon intensive
- 3) New norms like ethanol blending require change of design
 - 4) New fuels are yet to become profitable
 - 5) High costs of ancillary developments like charging infrastructure

Measures that can be taken

- 1) A "Phase Down" approach instead of "Phase Out" approach
- 2) Robust vehicle scrappage policy to salvage the most out of the end-of-life vehicles
E.g. non BS-VI compliant cars

- 3) Government interventions
to share financial burden
of new technologies
eg. PM-JIVAN for 29
bio-refineries
- 4) Global cooperation
↳ \$100 bn transfer from
developed countries as
per Paris Deal
- 5) Improving R&D expenditure
(presently 0.65% of GDP only)

Alleviating concerns
with regards to fuel efficiency
can go a long way in
helping India realise Panchamrit
goals like reducing carbon
emissions by 1 billion tonnes.

17. Urban fire is becoming a serious cause of concern in Indian cities. In this context, highlight the major causes behind urban fires in India. What steps can be taken to build robust fire resilience in Indian cities? (250 words) 15

शहरी आग (अर्बन फायर) भारतीय शहरों में चिंता का एक गंभीर कारण बनती जा रही है। इस संदर्भ में, भारत में शहरी आग के प्रमुख कारणों पर प्रकाश डालिए। भारतीय शहरों में मजबूत अग्नि रोधी क्षमता के निर्माण हेतु क्या कदम उठाए जा सकते हैं?

India is witnessing rising cases of urban fire, that is, fire in urban amenities of cities.
 eg. Fire in 60 story building in Mumbai

Major Causes

- 1) Lack of coherent standard operating procedure to control any early sparks
- 2) Uncontrolled urbanisation and flouting of construction norms like 'Floor:Area' ratio

- 3) Congested facilities increase vulnerability
- 4) No uniform anti-fire protocol in Building Bye Laws
- 5) Corrupt practices of storage of inflammable fuels
↳ leak hoarding of CNG by restaurants
- 6) Rising extreme weather events
∴ eg. heatwaves
- 7) Naked wiring at multiple places causing hazards of short circuiting

Steps for robust fire resilience

Prevention

Citizen awareness programs

Stringent Building Codes for wires storage etc.

Best practices like proper channels for fuels and inflammable

Response

Fire fighting
equipments like
extinguishers

Permanent helpline
made available

Educating people in
first aid response
eg. Putting blankets etc.

Recovery

Ambulance service

Collaboration with
fire department

Rehab centres for victims

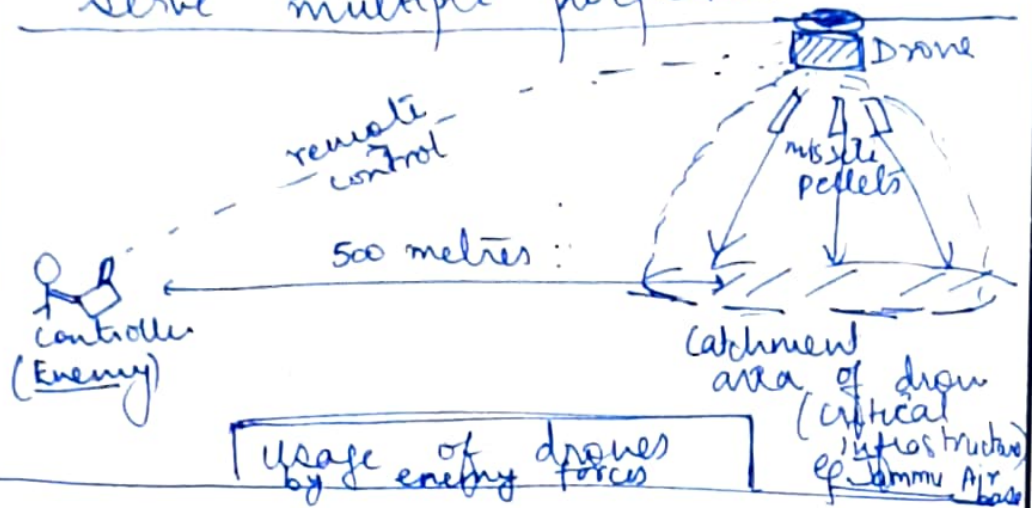
Financial help to buildings,
shops etc. to get back
on their feet

Robust protocols for
Urban fire need to be added
to Disaster Management Act 2005.

18. Drones in border areas present a serious threat for border management in India. Elaborate. Also, discuss the different measures taken to regulate the use of drones in India. (250 words) 15

सीमावर्ती क्षेत्रों में ड्रोन, भारत में सीमा प्रबंधन के समक्ष एक गंभीर खतरा उत्पन्न करते हैं। सशस्त्र हमला करने के लिए। साथ ही, भारत में ड्रोन के उपयोग को विनियमित करने के लिए किए गए विभिन्न उपायों पर चर्चा की जाए।

Drones refer to unmanned aerial vehicles that can be remotely controlled, and serve multiple purposes.



Drones as threat for border management

- 1) Difficult to detect, especially when of small sizes
e.g. Nano Drones of 250 gm

- 2) New age technology hence defence capabilities often not up-to-date
- 3) Difficult to trace the 'source' of remote control
- 4) Can act as weapon delivery systems for multiple kinds
eg - biowarfare by drones
sprinkling anthrax
 └ missile attack like one done by US on Al-Qaeda chief Zawahiri
- 5) Due to high manoeuvrability, difficult to counter act
- 6) Can indulge in surveillance and espionage in border areas

Different measures to regulate
drones in India

- 1) 'Anti Rogue Drone Rules' call

for technology development of
soft kill ~~also~~ (jammers) and
hard kill by DRDO

- 2) No-Permission-No-Takeoff (NPNT)
system for drones
- 3) Drones need registering (except
Nano drones) on Digital Sky
Platform
- 4) Restrictions on foreign involvement
in drones ecosystem

Government needs
to step up its anti-drone
capabilities, as they are the
future of warfare. With 2
hostile neighbours in north,
such avenues become necessity
for India.

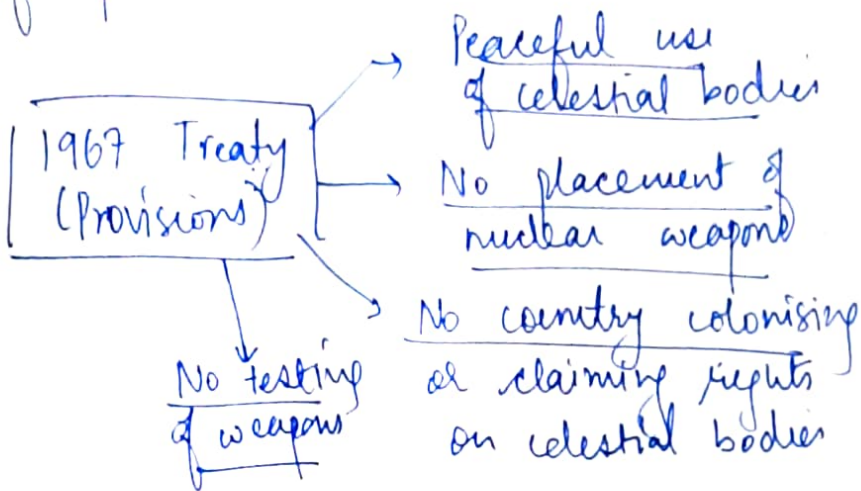
19. Despite a global framework to prevent weaponization of space, it has been increasing in the recent times. Discuss. Also, give an account of the implications of space weaponization.

(250 words) 15

अंतरिक्ष के शस्त्रीकरण को रोकने के लिए एक वैश्विक ढांचा होने के बावजूद, हाल के दिनों में इसमें वृद्धि हुई है। चर्चा कीजिए। साथ ही, अंतरिक्ष के शस्त्रीकरण के निहितार्थों का विवरण दीजिए।

Outer Space Treaty, 1967

tried to provide a global framework to prevent weaponisation of space.



Increasing weaponisation of space

- 1) Anti-satellite missile tests
eg. India's SHAKTI mission

- 2) New capabilities like hypersonic delivery systems make it an easy task to act quickly
- 3) space Military Force
Eg. in USA
- 4) Quantum technology to decrypt and encrypt data
Eg. China's Micius satellite
- 5) New space station projects by China and Russia

Implications of space weaponisation

- 1) can cause arms race
- 2) Dilution of public trust in global cooperation as treaties hold no meaning
- 3) Backsliding of space research

- 4) Endangering outer space
- 5) Debris from anti-satellite explosions etc. can cause Kessler syndrome of debris collision
- 6) Potential harm to space based systems and astronauts

In the age of increased efforts against nuclear armaments and chemical/biological warfare, a new avenue of mass destruction (space) is the last thing that humanity needs. Global efforts are required to counter such developments.

20. What do you understand by a bio-economy? Highlight the role that the National Biotechnology Development Strategy 2021-2025 can play in creating a robust bio-economy in India. (250 words) 15

बायो-इकोनॉमी (जैव-अर्थव्यवस्था) से आप क्या समझते हैं? भारत में एक मजबूत बायो-इकोनॉमी के गठन में राष्ट्रीय जैव प्रौद्योगिकी विकास रणनीति 2021-2025 द्वारा निभाई जा सकने वाली भूमिका पर प्रकाश डालिए।

Bio-economy refers to the economy centered around the usage of biological resources for deriving benefits.
↳ eg. GM crops

National Biotechnology Development Strategy 2021-25 (NBDS) can help in creating a robust and affluent bio-economy in India, augmenting other sectors of economy.

Role of NBDS in creating a robust bio-economy

Agriculture

- Help in fighting abiotic stresses
Lef. drought resistant crops
- Disease and Pest resistant crops
Lef. Bt-Cotton, GM-Mustard
- More remunerative crop patterns and food systems sustainability

Healthcare

- Gene therapy
- Stem cell therapy
- Gene editing
- Vaccine development
- Monoclonal antibodies
- New diagnostic techniques
- Organ Transplant effectiveness

Other areas

- Population assessment via genome studies
- Environmental benefits
 ↳ eg. Bioremediation, Oil Zapper
- DNA fingerprinting
- DNA computers for storing large numbers of datasets
 eg. at Weizmann Institute, Israel

Biotechnology is a double edged sword.

Effective implementation of policies like NBDS 2021-25 and ramping up government expenditure is necessary to salvage the most out of the \$ 100 Bn biotech industry by 2025.